# **Group Tasks**

- 1) Critical Events (e.g., object on road)
- 2) Sequenced Events (e.g., target detection tasks).
- 3) Maneuvers and tasks (e.g., turns, lane changes and car following).

## Questions

- A. What common scenarios should we have?
- B. How should these be described?



# **Group 1: Critical Events**

### **Participants**

- Peter Burns, Transport Canada
- Blair Nonnecke, University of Guelph
- Gary Rupp, Ford
- Louis Tijerina, Ford
- Judy Gardner, Motorola

## **Critical Events Discussion**

The utility of critical events is questioned. There are many limitations to using critical events:

- variability of response data (e.g., brake, steer, crash)
- limited quantity of unstable data (missed events)
- learning and repeatability (within S's design difficult)
- difficulty in creating surprise,
- problem of high drama,
- re-usability,
- construct validity (crash dilemma).

Is a standard needed for individual scenarios or all scenarios?

<u>Definition</u> – An unexpected stimulus that requires a measurable driver maneuver.



### **Critical Scenario Stimuli**

### **Objects**

- Moving objects
- Stationary objects
- Lead vehicle stopped (stationary), decelerating (engine or brake), slow moving,
- Obstacle on road (animate or not)
- Vehicle incursion (merge, crossing, oncoming)
- Blindspot vehicle
- Following vehicle hazard

Road (environment, black ice, pot hole, fog)



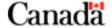
### b) How should these be described?

#### Measures:

- Detection/ recognition/ preparation/ execution
- Pedal release
- Brakes
- Visual behaviour

#### Characteristics/attributes of critical events:

- Code (text/ use cases (programming) / video clips/ sketches/ story board/
- Triggers
- The scene
- Object's actual behaviour (path, speed, duration)
- Object's perceived behaviour
- Behaviour of other relevant objects
- Subject vehicle (influenced/ managed/ guided/ pushed ...)
- Interaction between subject and object
- Distance/ separation longitudinal, sight, time to contact, decision time.
- Response possibilities (avoidance, brake, steer)
- Dealing with crashes, or missing data.
- Physical characteristics (object size, colour, contrast...).
- Creating surprise temporal uncertainty, spatial uncertainty, tricks/ foils...





# **Group 2: Sequenced Events**

### **Participants**

- Steffan Mattes, DaimlerChrylser
- Barry Kantowitz, UMTRI
- John Shutko, Ford
- Tom Ranney, TRC
- Chris Monk, NHTSA



# **Sequenced Events Discussion**

General scenario: leading vehicle to keep speed constant

### Type of event

Artificial, always same location (red square in center position)

Artificial, random location

for artifical: on screen vs. in car (LED, head mounted)

Real, not associated with driving (irrelevant traffic sign)

Real, meaningful for primary task (vehicle ahead braking; sign indicates lane change)

visual vs. auditory

how fatiguing is the additional task (especially for ternary tasks)

#### Frequency of events

low vs. high, regular vs. random

### Type of response

Additional response (keypress)

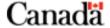
well learned response (braking, steering for collision avoidance)

artificial response due to instruction^

### Type of analysis

RT, errors, driving performance

note: control gaze direction





# **Group 3: Maneuvers and Driving**

### **Participants**

- Hideka Hada, Mitsubishi Motors
- Yiannis Papelis, University of Iowa, NADS
- Wade Allen, Systems Tech
- Dave Hoffmeister, Ford
- Brian Repa, GM
- Ergan Uc, University of Iowa
- S. Espie, INRETS
- Johan Janson Olstrom, Linkoping University
- Hamish Jamson, Leeds University



## **Maneuvers Discussion**

- Continuous tasks would give a better measure of performance that single maneuvers or sequenced events.
- Steering with wind gusts, curving road, car following with variable speed profile.
  Common analytic aspects are the behaviour of the stimulus.
- Common Stimulus-Response measurement is FFT technique for measuring S-R.
- They did not discuss discrete tasks prob you can miss it like events and miss data or must repeat it.
- Group suggests continuous measures.
- Subject incentives were also discussed these and instructions can influence behaviours significantly. Doing the best you can is not enough. Basic psychology literature says a lot on incentives and decision making.

